



15 Great Excel Tips

September 16, 2003

By Helen Bradley

Microsoft Excel is jam-packed with functions that perform a range of handy calculations and tests. We take a look at 15 Excel functions you may not know about and show you some clever ways to put them to work on your data.

Two words of warning: First, some of these functions work only when the Analysis ToolPak add-in is enabled. To do this, choose *Tools | Add-ins*, select the check box titled *Analysis ToolPak*, and click on OK. If *Analysis ToolPak* is not installed, you'll be prompted to install it. Second, the purpose of this article is to whet your appetite for these functions; we don't have the space to cover their uses in detail. To find more information about any of these functions, type the function name in Excel Help.

What's your favorite Excel function? Did you come up with a clever formula that enhances your worksheets? Want to share? Let us know in our Solutions forum.

COUNTIF Function

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The COUNTIF function counts the number of times a condition is met. For example, if you have a list of days in a month in column A (cells A1:A31) and your sales receipts for those days in column B, you can count the number of days that your sales exceeded \$5,000 with this function: =COUNTIF(B1:B31,">5000"). A similar function, SUMIF, totals values instead of counting them.

CHOOSE Function

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The CHOOSE function takes a number from 1 to 29 and a list of items (up to 29) and returns the item that corresponds to the number. One use for this function is to return the day of the week for a given date. To do this, couple it with the WEEKDAY function, which gives a day number (1 to 7) for a date, then use CHOOSE to turn the number into a day name. Assuming your date is in cell B2, use this function to get the day of the week it falls on:

=CHOOSE(WEEKDAY(B2), "Sun", "Mon", "Tue", "Wed", "Thu", "Fri", "Sat")

MOD Function

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MOD (or modulus) returns the remainder when one number is divided by another. For example, =MOD(4,3) returns 1. Use this function to format every other row of a worksheet by selecting the cells to format and choosing *Format | Conditional Formatting*. Choose *Formula Is* and type this formula: =MOD(ROW(),2). (ROW returns the current row number.) Click on *Format* and set a pattern for alternate rows on the *Patterns* tab. Click on OK when you're done.

DATEDIF Function

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The DATEDIF function, undocumented in most Excel versions, returns the time between two dates, measured in your choice of completed years, completed months, or days. This function is handy for calculating a person's age. Put the person's birth date in cell A1 and write this formula in cell B1 to calculate the age in years: =DATEDIF(A1,NOW(),"y")

NETWORKDAYS Function

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The NETWORKDAYS function calculates the number of workdays (excluding weekends) between two dates. You can specify holidays that should be excluded from the count. Place your holiday dates in column A, then select them and click on *Insert | Name | Define* and name the range holidays. Place the start and end dates in cells B1 and C1 and use this function to calculate the number of workdays between the two:
=NETWORKDAYS(B1,C1,holidays)

CONVERT Function

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Use the CONVERT function to convert measurements from one unit to another. For example, to convert a value in cell A2 from inches to centimeters, use this function: =CONVERT(A2,"in","cm"). Excel Help contains a complete list of the conversions and function arguments to use for each.

ISERROR Function

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The ISERROR function returns True when the cell to which it refers contains an error and False when it doesn't. Combine this with NOT and an IF function to create a string that adds a range of numbers, ignoring any cells that contain errors. So, if your numbers appear in the range A2:A6, type this function and press Ctrl-Shift-Enter to enter it into the cell, as it is an array function (a function that performs multiple calculations on multiple values):

=SUM(IF(NOT(ISERROR(A2:A6)),A2:A6,""))

LARGE Function

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The LARGE function will return the *nth* largest number in a list. If you have a list of test scores in cells A2:A10, you can find the third-best score with this function: =LARGE(A2:A10,3). There is a similar function, SMALL, which finds the *nth* smallest number in the list.

SUBTOTAL Function

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SUBTOTAL calculates a subtotal for a list, which may be useful when you are using a filtered list. The problem with using SUM with a filter is that the function totals both hidden and visible values. SUBTOTAL, however, sums only the visible values. Instead of writing the SUBTOTAL function yourself, click on the AUTOSUM button on the toolbar and it will write the correct SUBTOTAL function.

SQRT Function

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To calculate the square root of a number, Excel uses the SQRT function; for example, =SQRT(25) calculates the square root of 25. When you need, say, a cube root, you must work with the mathematical idea that the cube root is calculated by raising the number to the power of 1/3. So calculate the cube root of 27 using =27^(1/3). This principle extends to let you find the root of any number by raising it to a fractional power.

Look-Up Functions

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Look-up functions find data in tables. If you have a list of office names in column A and sales figures in columns B and C, the function =VLOOKUP("Seattle",A2:C15,2, FALSE) looks for Seattle in column A of the data table (A2:C15) and returns the corresponding value from column B (the second column in the table). Use FALSE in the formula to tell Excel that the data is not sorted and that an exact match is required.

=TODAY() Function

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The function =TODAY() places the current date in a cell. You can use this with a macro to save a file using today's date as its filename. This sample macro code saves the file using the contents of cell A1 as the filename. Simply place =Today() in cell A1 and run the following macro to test it:

```
Sub savenamefromcell()  
Dim savename AsString  
savename=Sheets(1).Range("A1").Value & ".xls"  
ActiveWorkbook.SaveAs Filname: =savename  
End Sub
```

FREQUENCY Function

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Use the FREQUENCY function to count the instances a particular number occurs in a series of values. The function requires a set of ranges (or bins) to group the values. For example, use bins of 5, 10, 15, and 20 to report the frequency of values in the ranges 0:5, 6:10, 11:15, and 16:20. Because FREQUENCY is an array function, you must first select a range of cells the same size as the bin range, then type the function =FREQUENCY (A1:D15, F2:F5) then press Ctrl-Shift-Enter. This example uses bins in the range F2:F5 to count numbers in the range A1:D15.

OFFSET Function

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Creating dynamic ranges is easy with the OFFSET function. For example, this function, used in the Insert | Name dialog, names a list of numbers in column A, assuming the list begins in cell A1 and there are no blank cells in the range: =OFFSET(\$A\$1,0,0,COUNTA(\$A:\$A),1). If you name your range, for example, FilledCells, the function =SUM(FilledCells) will sum the values in the list. The results update automatically as numbers are added or removed. The arguments for the OFFSET function are the starting or reference cell; the number of rows and columns up, down, or across from the reference cell; and the number of rows and columns to return. The OFFSET function is quite useful for creating charts that update as new data is added. For a working example, see "[Automatic Charting](#)".

FV Function

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The *future value* function, FV, calculates the return on a given investment. To calculate the ten-year value of \$1,000 invested today at 5 percent interest (compounded monthly), =FV(5%/12, 10*12,,-1000) returns \$1,647.01. If you make additional monthly payments of \$10 per month, the future value is =FV(5%/12,10*12,-10,-1000) and returns \$3,199.83. Negative values are used because you are paying out money, and you should take care to scale the interest rate to match the periods used. We're assuming 12 periods per year, so the interest rate is 5%/12.

Little-known functions like these open new avenues of productivity and fun for Excel users.

IF Function

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■ Online Extra

Much to our surprise, many readers aren't familiar with one of Excel's most useful functions—IF—which evaluates a condition and returns one value when the condition is true and another when the condition is false. For example, consider a situation in which you charge \$15 for regular shipping and an extra \$10 for expedited shipping. Much to our surprise, many readers aren't familiar with one of Excel's most useful functions—IF—which evaluates a condition and returns one value when the condition is true and another when the condition is false. For example, consider a situation in which you charge \$15 for regular shipping and an extra \$10 for expedited shipping. If cell A2 of your invoice contains a Y for expedited shipping, you can calculate the total shipping using this function: =IF(A2="Y",25,15)

OR and AND Functions

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■ Online Extra

The functions OR and AND evaluate tests and return either True or False. OR returns True when any of its tests is true and False when they are all false. AND returns True only if all tests are true and returns False if one or more is not true. So =OR(2=3,4=4) returns True and =AND(2=3,4=4) returns False. These functions are often used in combination with functions like IF to configure multiple tests.

INT Function

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■ Online Extra

The INT function rounds a number down to the nearest integer. It is useful for extracting the various parts of a real number. Use =INT(A1) to return the integer portion of the number in cell A1 and =A1-INT(A1) to return the decimal fraction portion (the part after the decimal point). One common use for INT is with the RAND function, extracting the integer portion of a random number, like =INT(RAND()*25).

PROPER Function

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■ Online Extra

Use the PROPER function to adjust the capitalization of a cell entry. =PROPER(A1) displays the contents of cell A1 in proper case where only the first letter of each word is capitalized. The functions UPPER and LOWER are similar and display text in all uppercase or all lowercase, respectively.

EOMONTH Function

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The EOMONTH function calculates the last day of the month and can be handy when determining the day on which a payment is due. The function takes a date and a number of months ahead. Use 0 for the current month, 1 for next month, -1 for last month, and so on. For example, =EOMONTH(Today(),1) calculates the last day of next month.

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